

# इंटरनेट

# मानक

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IS 4296-3 (2002): Tools for Pressing, Part 3: Round Punches with Cylindrical Head and Straight Shank [PGD 4: Metal Forming Machines]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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भारतीय मानक  
दाबन के औजार

भाग 3 बेलनाकार शीर्ष तथा सीधे शैंक वाले गोल पंच

*Indian Standard*

**TOOLS FOR PRESSING**

**PART 3 ROUND PUNCHES WITH CYLINDRICAL HEAD AND STRAIGHT SHANK**

ICS 25.120.10

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**BUREAU OF INDIAN STANDARDS**  
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## NATIONAL FOREWORD

This Indian Standard (Part 3) which is identical with ISO 8021 : 1986 'Round punches with cylindrical head and straight shank' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Metal Forming Machines Sectional Committee and approval of the Basic and Production Engineering Division Council.

Due to increased volume of work being done on hand-operated and power-operated presses in the country, it had created a need for the standardization of tooling elements for use on such machines. Much of the work produced by press working tools necessitates the piercing of holes. To fulfill this need, this Indian Standard was first published in 1967 to cover the general requirements for round piercing punches up to 14.4 mm effective diameter for making round holes.

Subsequently in the passage of time, many changes have been introduced in the industry to suit the need of the user industries. To bring these changes in this standard, the standard has been revised to brought out in four parts. The following major changes have been made:

- a) Types A and B of round piercing punches without head have been deleted as these are no longer in use from IS 4296.
- b) Round punches with cylindrical head with straight shank and cylindrical head with reduced shank have been included and are covered in Parts 2 and 3 of this standard.
- c) Dimensions of Types D and C have been thoroughly modified and are covered in Parts 1 and 4.

The main use of punches defined in this standard is for punching holes in steel sheet. They may also be used for punching holes in other materials.

Other three parts of this standard with main title as 'Tools for pressing' are:

- Part 1 Round punches with 60° conical head and straight shank (*first revision*)
- Part 2 Round punches with cylindrical head and reduced shank
- Part 4 Round punches with 60° conical head and reduced shank (*first revision*)

The text of the ISO Standard has been approved as suitable for publication as Indian Standard with small deviations that radius indicated in the figure has been modified to read as radius should be grounded to remove tool marks.

Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.
- b) Comma (,) has been used as a decimal marker in the International Standard while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

(Continued on third cover)

*Indian Standard*  
**TOOLS FOR PRESSING**

**PART 3 ROUND PUNCHES WITH CYLINDRICAL HEAD AND STRAIGHT SHANK**

**1 Scope and field of application**

This International Standard lays down the basic dimensions and tolerances in millimetres for round punches with cylindrical head and straight shank in the diameter range 1 to 32 mm.

It gives materials and hardness as examples, and specifies the designation of punches according to this International Standard.

The main use of punches defined in this International Standard is for punching holes in steel sheet. They may also be used for punching holes in other materials.

**2 References**

ISO 4957, *Tool steels*.

ISO 6508, *Metallic materials — Hardness test — Rockwell test (scales A — B — C — D — E — F — G — H — K)*.<sup>1)</sup>

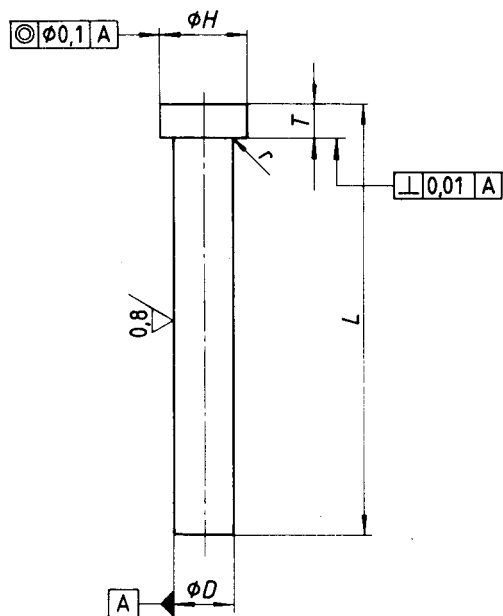
ISO 8695, *Punches — Nomenclature and terminology*.<sup>2)</sup>

1) At present at the stage of draft. (Revision of ISO/R 80-1968 and ISO 2713-1973.)

2) At present at the stage of draft.

3 Dimensions

Surface roughness value in micrometres



$D$ m5	$T$ $+0,25$ 0	$H$ 0 $-0,25$	$L$ $+1,0$ 0	$r$ $\pm 0,1$	$D$ m5	$T$ $+0,25$ 0	$H$ 0 $-0,25$	$L$ $+1,0$ 0	$r$ $\pm 0,1$						
1,0 1,05 1,1 1,2 1,25 1,3 1,4 1,5 1,6	3,0	3,0	63, 71, 80, 100	0,25	4,8	3,0	7,0	63, 71, 80, 100	0,25						
1,7 1,8 1,9 2,0					3,0	4,0	5,0			5,0	8,0				
2,1 2,2 2,4 2,5 2,6 2,8 3,0							3,0			5,0	5,3 5,6 6,0	5,0	9,0		
3,2 3,4 3,6 3,8 4,0											6,3 6,7 7,1 7,5 8,0			5,0	11,0
4,2 4,5											8,5 9,0 9,5 10,0				
	10,5 11,0 12,0 12,5 13,0	5,0			16,0										
	14,0 15,0 16,0					5,0			19,0						
	20,0 25,0 32,0						5,0			24,0 29,0 36,0					

NOTE — The combination of the length and diameter values can be chosen freely but shall be compatible with the particular application.

#### 4 Material and hardness

The material is left to the manufacturer's discretion. The following hardness values are given as examples :

- a) tool steel with 5 % to 12 % Cr
  - point :  $62 \pm 2$  HRC
  - head :  $45 \pm 5$  HRC
- b) high-speed steel
  - point :  $64 \pm 2$  HRC
  - head :  $52 \pm 5$  HRC

#### 5 Designation

A punch in accordance with this International Standard shall be designated by

- a) reference to this International Standard;
- b) its point diameter,  $D$ ;
- c) its length,  $L$ .

*Example :*

**Punch ISO 8021-6,3 × 80**



(Continued from second cover)

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their place are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 4957 Tool steels	IS 7291 : 1981 High speed tool steels ( <i>first revision</i> )	Modified
ISO 6508 Metallic materials — Hardness test — Rockwell test (scales A-B-C-D-E-F-G-H-K) <sup>1)</sup>	IS 1586 : 2000 Method for Rockwell hardness test for metallic material (Scales A-B-C-D-E-F-G-H-K 15N, 30N, 45N, 15T, 30T and 45T) ( <i>third revision</i> )	do
ISO 8695 : 1987 Tools for pressing — Punches — Nomenclature and terminology	IS 15300 : 2002 Tools for pressing — Punches — Nomenclature and terminology	Identical

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

<sup>1)</sup>Since revised as ISO 6508-1 : 1999 'Metallic materials — Rockwell hardness test — Part 1 : Test method (scales A-B-C-D-E-F-G-H-K-N-T)',

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### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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